

Sub  
C2

Claim 53. A water insoluble bead comprising droplets of an oil in water emulsion in a polymer matrix, the oil in water emulsion comprising at least one volatile hydrophobic component, a surface active agent and water, the volatile hydrophobic component, surface active agent and polymer matrix being selected and being present in the bead in respective amounts such that the bead is storable in water without release of the volatile component and such that the volatile component is released from said water insoluble bead in atmospheric air. *intended use*

B1  
Sub  
C3

Claim 54. The water insoluble bead according to claim 53, wherein the polymer matrix comprises a protein.

Claim 55. The water insoluble bead according to claim 54, wherein said protein is selected from the group consisting of gelatin, albumin, casein and lactoglobulin.

Claim 56. The water insoluble bead according to claim 53, wherein said polymer matrix comprises a polysaccharide selected from the group consisting of sodium alginate, carraggenan, guar gum, locus bean gum, chitosan, pectin and carboxy methyl cellulose.

Claim 57. The water insoluble bead according to claim 53, wherein said surface active agent is selected from the group consisting of a protein, a monomeric surfactant and a polymeric surfactant.

Claim 58. The water insoluble bead according to claim 53, wherein said surface active agent is selected from the group consisting of ethoxylated sorbitan ester, alkyl ether, a block copolymer and gelatin.

Claim 59. The water insoluble bead according to claim 53, wherein said bead is of a size between 0.5 micron and 1 mm.

Claim 60. The water insoluble bead according to claim 53, wherein said bead is of a size between 5 and 80 microns.

Claim 61. The water insoluble bead according to claim 53, wherein said volatile component is a material that has an effect on a living organism.

Claim 62. The water insoluble bead according to claim 53, wherein said volatile component is a pheromone.

Claim 63. The water insoluble bead according to claim 62, wherein said pheromone is selected from the group consisting of grandlure, muscalure, gossyplure and disparlure.

✕ Claim 64. The water insoluble bead according to claim 53, wherein said volatile component is an essential oil.

✕ Claim 65. The water insoluble bead according to claim 53, wherein said volatile

component is a pesticide.

Claim 66. The water insoluble bead according to claim 53, wherein said volatile component is an attractant.

Claim 67. The water insoluble bead according to claim 66, wherein said attractant is selected from the group consisting of eugenol, benzyl alcohol, leaf alcohols, aldehydes and acetates.

*B1 Cont*  
Claim 68. The water insoluble bead according to claim 53, wherein said volatile component is an attractant inhibitor.

*X*  
Claim 69. The water insoluble bead according to claim 68, wherein said attractant inhibitor is selected from the group consisting of (Z)-9-tetradecenyl formate and (E,E)-10, 12-hexadecadienol.

Claim 70. The water insoluble bead according to claim 53, wherein said volatile component is present in an amount of up to 50% wt/wt.

Claim 71. The water insoluble bead according to claim 53, wherein said volatile component is present in an amount of up to 20% wt/wt.

*Sub C4*  
~~Claim 72. The water insoluble bead according to claim 54, wherein said protein is a~~

gelatin.

Claim 73. The water insoluble bead according to claim 72, wherein said gelatin is a type B gelatin.

Claim 74. The water insoluble bead according to claim 53, wherein said volatile component is eugenol.

Sub C5  
B1  
Cont

Claim 75. The water insoluble bead according to claim 53, further comprising tannic acid in an amount effective to provide a release rate of the volatile component from said bead in atmospheric air that is slower than a release rate of the volatile component from the bead without the tannic acid.

Claim 76. A process for preparing a sustained-release dispersion of water insoluble beads for release of a volatile hydrophobic component therefrom in atmospheric air, comprising:

- a) preparing an oil/water emulsion by homogenizing a volatile hydrophobic component in water, using at least one surface active molecule;
- b) mixing said emulsion with at least one water-soluble polymer and optionally rehomogenizing the mixture;
- c) adding the emulsion prepared in step (b) in a dropwise manner into a gellant solution to form said water insoluble beads;
- d) recovering the water insoluble beads from the gellant solution; and

e) storing the recovered beads in water.

Claim 77. A process according to claim 76, further comprising the step of chemically cross-linking polymers present in said composition.

Claim 78. A process according to claim 76, further comprising the step of drying said beads.

Claim 79. A process according to claim 76, wherein said gellant solution is selected from the group consisting of an electrolyte solution and a multivalent ion solution.

Claim 80. A process according to claim 76, wherein said volatile component is a bioactive material.

Claim 81. A process according to claim 76, wherein said volatile component is a pheromone.

Claim 82. A process according to claim 81, wherein said pheromone is selected from the group consisting of grandlure, muscalure, gossyplure and disparlure.

X Claim 83. A process according to claim 76, wherein said volatile component is an essential oil.

Claim 84. A process according to claim 76, wherein said volatile component is a pesticide.

Claim 85. A process according to claim 76 wherein said volatile component is an attractant.

Claim 86. A process according to claim 85, wherein said attractant is selected from the group consisting of eugenol, benzyl alcohol, leaf alcohols, aldehydes and acetates.

Claim 87. A process according to claim 76, wherein said volatile component is an attractant inhibitor.

Claim 88. A process according to claim 87, wherein said attractant inhibitor is selected from the group consisting of (Z)-9-tetradecenyl formate and (E,E)-10, 12-hexadecadienol.

Claim 89. A process according to claim 76, wherein said volatile component is present in an amount of up to 50% wt./wt.

Claim 90. A process according to claim 76, wherein said volatile component is present in an amount of up to 20% wt./wt.

Claim 91. A process according to claim 76, wherein said surface active molecule is a

gelatin.

Claim 92. A process according to claim 91, wherein said gelatin is a type B gelatin.

Claim 93. A process according to claim 76, wherein said gellant is an aqueous metal salt solution.

Claim 94. A process according to claim 93, wherein said aqueous metal salt solution comprises a divalent or trivalent metal salt.

Claim 95. A process according to claim 93, wherein said metal salt solution comprises chlorides and acetates of calcium, barium and copper.

Claim 96. A process according to claim 76, wherein the emulsion of step (b) is sprayed into said gellant to form micron-sized beads.

Claim 97. A process according to claim 76, wherein said polymer is a polysaccharide.

Claim 98. A process according to claim 97, wherein said polysaccharide is an alginate.

Claim 99. A process according to claim 98, wherein said alginate is a water-soluble salt of alginic acid.

Claim 100. A process according to claim 98, wherein said alginate is a water-soluble salt of organic bases.

Claim 101. A process according to claim 98, wherein said alginate is selected from the group consisting of sodium, potassium, magnesium, ammonium alginate and amines.

Claim 102. A process according to claim 98, wherein said alginate is present in an amount of about between 0.1 and 5% wt./wt.

Claim 103. A process according to claim 98, wherein said alginate is present in an amount of about between 1 and 1.5% wt./wt.

*B1 Cont*  
*102-2 lack antec*  
Claim 104. A dispersion comprising a plurality of water insoluble bead products and water, each of said water soluble bead products consisting of the water insoluble bead of claim 53.

*Non-elected*  
Claim 105. A method for the sustained release of a volatile material comprising the steps of:

a) providing the water insoluble bead of claim 53; and

b) exposing the water insoluble bead to atmospheric air to cause a sustained release of the volatile hydrophobic component.